

# Engineering I: Introduction to Engineering Design

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Location: ECE Building – Room 109

Office Hours: Monday-Thursday 9:35-10:40, Friday 12:00-3:30

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## I. Course Description

The purpose of this course is to introduce students to fundamental engineering concepts, primarily by project-based learning. By executing the engineering design process, the students will practice problem solving strategies and teamwork skills in a variety of engineering activities.

## II.

### Course Topics

1. Unit 1: Intro to Engineering
  - 1.1. Fields and Careers in Engineering
  - 1.2. Engineering Design Process Overview
  - 1.3. Problems and Ethics in Engineering
  - 1.4. Scientific Notation
  - 1.5. Units of Measurement
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  - 1.7. Technical Drawing
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  - 2.1. Stress and Strain
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  - 4.1. Aircraft Forces – Lift and Weight
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  - 4.5. Control Surfaces
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  - 5.1. Mechanical Equilibrium
  - 5.2. Newton's First Law Applied
  - 5.3. Newton's Second Law Applied
  - 5.4. Newton's Third Law Applied

6. Unit 6: Linear and Projectile Motion, Momentum

- 6.1. Linear Motion
- 6.2. Projectile Motion
- 6.3. Momentum

7. Unit 7: Energy, Temperature, Thermodynamics

- 7.1. Buoyancy and Density
- 7.2. Thermodynamics

8. Unit 8: Fluid Dynamics and Hydraulics

- 8.1. Fluid Dynamics Overview
- 8.2. Hydraulics
- 8.3. Actuators

9. Unit 9: Intro to Programming

- 9.1. Introduction to Programing Overview
- 9.2. Scratch Programming
- 9.3. Arduino Programming

10. Unit 10: Capstone Project

### III. Grading

#### Late Work Policy

Late work will have 10% of total possible points deducted for every class day that it is late, up to 50% or five class days. Late work will not be accepted after five class days. This does not include the weekend.

If you are absent, it is your responsibility to inquire about any work and or assignments missed. I will not chase you down. The late work policy applies upon your return to class.

#### Grading Scale:

A = 90-100

B = 80-89

C = 70-79

D = 60-69

F = Below 60

#### Assignment Categories:

Homework/Classwork = 20%

Projects/Activities = 30%

Quizzes = 20%

Participation = 30%

## IV. Classroom Policies

1. Grading is not a reflection of who you are or how much I like you. Grading is an evaluation of your work and participation in this class.
2. Be courteous and respectful to the teacher and to your classmates. Do not talk when the teacher is talking. Raise your hand, be recognized, and then you may speak. Be as considerate of others as you want them to be to you.
3. Respect the privacy of the teacher and other students. Do not sit at the teacher's desk or bother anything in or on the desk. Do not prowl in other people's belongings.
4. Do not turn lights on and off, open or close window blinds, or move any furniture without the teacher requesting you to do so. It is very important that the door remain closed unless the teacher specifies different. Please do not loiter in or at the doorway.
5. Do not disrupt class with noise or other distracting activities.
6. Do not write on walls or furniture.
7. Tardiness is unacceptable. Be in your assigned seat when the bell rings. Do not move desks or chairs to get one you prefer.
8. Put all waste paper in the wastebasket, not on the desks or on the floor. I will ask you to clean up if paper is left on your desk. This school recycles; make sure to place plastic bottles and other recyclables in the appropriate container.
9. See Late Work Policy regarding absence(s). Make-up work due to absence is your responsibility.
10. If we have a visitor, you are to use your best behavior.
11. The teacher dismisses the class, not the time. Please do not jump and run. Please enter and leave like ladies and gentleman.
12. Cheating in any form will not be tolerated. Cheating will be punished with a zero on the assignment.
13. You are not to use personal electronic devices (cell phone, iPad, MP3 player, portable gaming device, etc.) in my classroom without permission. Computer use is only permitted in the classroom when indicated by the teacher.

One final word: No one can make you behave if you are bound and determined not to, but things are much more pleasant when you do. Make the most of your instructional time in class and let's have a great year together.

## V. Computer Policies

1. Do not change the computer background/wallpaper.
2. Do not touch the computer screens.
3. Do not write on the computer or computer peripherals.
4. If you are having computer issues please address them to the teacher.